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EXAMINER
LIU, SAMUEL W

ART UNIT	PAPER NUMBER
1653	15

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/647,019	HARVEY ET AL.	
	Examiner	Art Unit	
	Samuel W Liu	1653	

– The MAILING DATE of this communication appears on the cover sheet with the correspondenc address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/26/02 (Paper #10) & 4/7/03 (Paper #14)* .

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-14 and 16-65* is/are pending in the application.

4a) Of the above claim(s) *16-65* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-14* is/are rejected.

7)☒ Claim(s) *6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5 & 6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Applicants' preamendment filed 26 September 2000 (Paper No. 10) as to amendment of claims 5, 10, 17-18, 21-22, 24, 26-27, 31, 34, 37, 39, 40, 42, 45, 48-51 and 59-62, Applicant amendment filed 7 April 2003 (Paper No. 14) as to cancellation of claims 1 and 15 and amendment of claims 2-3, 6-8, 11-12, 16-17, 19-22, 25-27, 31, 34, 37, 40, 48-49 and 59-60, and Applicants' petition of extension of time of five months filed 7 April 2003 (Paper No. 13) have been entered.

Election/Restrictions

Applicant's election of Group I, claims 1-14, filed 7 April 2003 (Paper No. 14) with traverse is acknowledged. The traversal is on the ground that Groups I-VIII are interrelated and interdependent, not distinct. The Applicant's traversal has been fully considered. But it is unpersuasive.

Applicants assert that Group I, II, VII, VII, IX, XIII, XIV, XV and XVI should be examined together in the present application as they are interrelated by the special technical feature of molecules having a structural relationship (see page 6 of the response). The applicants' argument is unpersuasive. As indicated, Groups I and II, which are directed to polynucleotide and polypeptide, respectively, are distinct from one another because of the materially different structures of the compounds claimed. The biopolymers that are the subject of each group are distinct from each other because each biopolymer is structurally and functionally distinct. The biopolymers of each invention would be expected to exhibit different physical and chemical properties, and are capable

of separate manufacture or use; and the biopolymers require separate and independent searched. Thus, the restriction for examination purposes as indicated is proper.

Therefore, pending claims 2-14 are under examination to the extent that they are drawn to the elected invention. Claims 16-65 are withdrawn from consideration as being drawn to non-elected inventions.

Foreign Priority

Applicants' claim for foreign priority under 35 U.S.C. 119 (a)-(d) is acknowledged. The certified copy of the Australia PP2634 has been received.

Objection to Specification/Claims

The disclosure is objected to because of the following informalities:

(1) In page 2, line 10, "CARP" should be spelled out for the first instance of use. See also page 10, line 12, "EF-Hand"; page 30, line 27, "GST"; page14, line 2, "MLC-IGF-1"; page 57, line 18, "ELISA"; and page 63, line 5, "PCR" and line 9, "PCT".

(2) This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

(3) In Claim 6, "Csl" should be spelled out for the first recitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

Claims 2-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is indefinite because the claims recites "at least about 45% or greater similarity to", wherein "at least" is a narrower range than "about" which falls outside of this range. See also claims 4, 9 and 14. Additionally, claim 2 is unclear as to "or"; which is it, "at least about 45%" or "greater similarity to". In view of "similarity", the recitation is unclear as to what extent the claimed polynucleotide is of sequence identity to SEQ ID NO:2. See also claim 14. Further, claim 2 is vague with respect to the phrase "...sequence *substantially* as set forth in SEQ ID NO:2" wherein the term "substantially" renders the claim ambiguous as to whether or not the sequence is or is not identical to SEQ ID NO:2. Also, the recitations "derivative, homolog, analog, chemical equivalent or mimetic of said nucleic acid molecule" is indefinite as the specification provides insufficient definition or description for the recitations. See also claims 3-5 and 7-12. The dependent claims are also rejected.

Claim 3 is indefinite as to the recitation "is capable of hybridizing" since it does not equate to indication the specific binding must actually occur. See "... which specially hybridizes to..." instead.

Claim 12 recites "...comprising exon regions of which five comprise"; the recitation is awkward and not apparent as to whether or not "which five" refers to the five subsequences in which each subsequence comprise exon 1, 2, 3, 4 and 5, respectively, or refers solely to the exon fragment *per se*.

Claim 13 recites "...sequence corresponds to the gene maps set forth in Figure 2". The recitation is unclear as to what the said sequence corresponds in the map of Figure 2. It is of note that Figure 2 does not clearly indicate which exon is which sequence of SEQ ID NO:_.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-4, 6, 9, 12 and 14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification while being enabling for the claimed polynucleotides: cDNA nucleotide sequences SEQ ID NOs: 1 (from murine) and 3 (from human), and human genetic sequences of SEQ ID NOs: 6-10 corresponding to the exons 1-5, does not reasonably provide enablement for all polynucleotide variants that encompass numerous fragments, or derivatives set forth by the claimed languages, *e.g.*, (i) "a derivative" (claims 2-3, 12 and 14); (ii) "a homology" (claims 2-3, 12 and 14); (iii) "a mimetic" (claims 2-3, 12 and 14); (iv) "an analog" (claims 2-3, 12 and 14); (v) "a chemical equivalent" (claims 2-3, 12 and 14); (vi) "at least about 45% similarity to" (claims 2, 4, 9 and 14); and (vii) "a functional equivalent" (claim 6); wherein the derivative includes

fragments (*e.g.*, *oligonucleotides* and antisense molecules), parts, portions, mutants from natural, synthetic or recombinant sources, and fusion molecules – in which the mutants encompass insertion, deletion and substitution (see page 27, the second paragraph, and page 26, the first paragraph) and the derivative also includes degenerate nucleic acid sequence (see page 27, lines 10-11), wherein the chemical and functional equivalents include any molecules exhibiting partial activity, *i.e.*, one or more of the functional activities of the full-length *Csl* polynucleotide (see page 26, the third paragraph), and wherein the similarity encompasses differences of sequence identity 55% (see page 21, the last paragraph).

Applicant is in possession of the full-length polynucleotides SEQ ID NO:1 encoding Csl polypeptide (from murine), SEQ ID NOs: 3 encoding Csl polypeptide (from human), and the isolated genomic nucleotide sequences of SEQ ID NOs; 6-10 (from human). Applicant is not in possession of any isolated polynucleotides which structurally altered from the full-length molecules of SEQ ID NOs: 1 and 3; any isolated variant molecules, including allelic variants (*i.e.*, genetic variants), chemical synthetic variants as well as recombinantly-generated mutants (e.g., substitution, truncation or deletion, insertion or fusion (see page 27, lines 6-8)); and any structurally altered nucleotide sequences that is mimetic (see page 21,line 6), e.g., peptide nucleic acid; any fragment or portion of the full-length sequences that are only 5-50% identical to the full-length SEQ ID NOs:1 and 3. The current claim language encompasses a large number of the polynucleotide variants or fragments that are both structurally and functionally deviated from the disclosed full-length polynucleotides thereof.

The instant application does not provide guidance and working examples or representative example(s) as to structural and functional characterization of these variants. Absence of the guidance in the specification as to which ones would or would not have been a priori active or inactive, the current disclosure does not enable the skilled artisan to practice what the invention discloses. The claims as written encompass a large quantity of polynucleotide fragments or variants including (*i*) a large number of possibilities in respect to the length of polynucleotide, and (*ii*) a large number of mutational variants resulting from substitution, additions, deletions, fusion/chimeric, chemical modification and structural alterations in any combination of the above mentioned mutational types.

The claims of the instant application recite "at least about 45% or greater similarity" (see claims 2, 4, 9 and 14), wherein the similarity per se includes differences of sequence identity ranging from 5-50%, *i.e.*, 95-50% sequence identity to the full-length sequence (see page 21, the last paragraph). Thus, the variant nucleotide molecules as claimed are far more divergent than 45 % sequence identity mutants, which would render the claimed polynucleotide variant highly unpredictable.

On the other aspect, as for as "chemical equivalent", "analog" and "mimetic" sequences are concerned, the specification does not define each one of the above. The analog or mimetic would include chemical modification of the claimed nucleotide sequences, e.g., peptide nucleic acid molecules. The specification provides not guidance and working examples as to this regard. The specification is, thus, insufficient to enable skilled artisan to practice the invention as broadly claimed without an undue amount of

experimentation. Applicants are not in possession of the analog or mimetic of the isolated polynucleotide.

The claims of the present invention also recite the hybridization condition of low stringency for the claimed polynucleotides (see page 23). In light of the fact that possibility of a polynucleotide anneals to the known polynucleotide molecule under the low stringent condition (*e.g.*, 2M salt) would be enormous and unpredictable inasmuch as said condition would allow numerous nucleotide sequences or oligonucleotides to hybridize to the target sequence, absent the factual indicia to the contrary, quantity of the variants brought about by the current claim language would be far beyond what can be predicted.

Since the specification fails to provide working examples or/and guidance or teaching with regard to make and use of the polynucleotide variants stated *supra,* and fails to describe biological function of any representative member of the variant (genus), and since the variants recited in the present claim language (*e.g.*, at least 45% similarity to", "derivative, homolog, analog" and mimetic) render the claims so broad that the scope of claims is outside the bounds of the enablement and would have resulted in the necessity of undue experimentation.

Description of invention reduction to practice, unaccompanied by any meaningful, distinguishing characteristics of the peptide variants stated above is insufficient to satisfy written description requirement of 35 U.S.C. §112, since inventors could have provided description of the variants or representative thereof of SEQ ID NOs:1 or/and 3 polynucleotide(s), since actual reduction to practice may demonstrate possession of embodiment of invention, but it does not necessarily describe what

invention is, and since, in context of present case, disclosure of manner in which invention was reduced to practice does not satisfy more fundamental written description requirement set forth in Section 112.

Applicant has disclosed only the polynucleotides of SEQ ID NOs:1 and 5; therefore, the skilled artisan cannot envision all the contemplated nucleotide sequence possibilities recited in the instant claims. Consequently, conception cannot be achieved until a representative description of the structural and functional properties of the claimed invention has occurred, regardless of the complexity or simplicity of the method. Adequate written description requires more than a mere statement that it is part of the invention. See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (CAFC1993). The Guidelines for the Examination of Patent Application Under the 35 U.S.C.112, ¶ 1"Written Description" Requirement make clear that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species disclosure of relevant, identifying characteristics, *i.e.*, structure or other physical and or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the genus (Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 20001, see especially page 1106 3rd column).

One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of the variants to describe the claimed polynucleotide derivatives including fragments, portions and mutants, and fails to provide written description regarding the biological activity or role(s) of the polynucleotide variants.

Thus, Applicant was not in possession of making and using the claimed polynucleotides. *See University of California v. Eli Lilly and co. 43 USPQ2d 1398.*

Applicant is directed to the Revised Interim Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

In consideration of the issue stated *supra*, the amount and level of experimentation needed is undue.

Claim Rejections - 35 USC §102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 2-4, 7-10 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonaldo, M. F. et al. (*Genome Res.* (1996) 6, 791-806).

Bonaldo et al. teach a polynucleotide encoding a polypeptide of Accession No. BQ176246 (nucleotides 464-658) which is complimentary to the sequence (nucleotides 289-453) of SEQ ID NO:1 encoding amino acid sequence SEQ ID NO:2 of the current application. Since the derivative of nucleic acid sequence of the present invention includes antisense sequence or oligonucleotide (see page 27, line 9), the Bonaldo et al. teaching meets the limitation set forth in claim 2 of the instant application.

Furthermore, Bonaldo et al. teach a polynucleotide comprising (i) the sequence (Accession No. BM697544, nucleotides 128-184) that reads on the exon 2 sequence (nucleotides 1-57) of SEQ ID NO:7 the current invention; (ii) the sequence (Accession No. BM69755, nucleotides 185-271) that reads on the exon 3 sequence (nucleotides 1-87) of SEQ ID NO:8 of the current invention; (iii) the sequence (Accession No. BM69755, nucleotides 272-420) that reads on the exon 4 sequence (nucleotides 1-149) of SEQ ID NO:9 of the current invention; and (iv) the sequence (Accession No. BM717052, nucleotides 97-518) that reads on the exon 5 sequence (nucleotides 1-422) of SEQ ID NO:10 of the current invention. The above teachings meet the limitation set forth in claim 2, *i.e.*, a polynucleotide derivative, which includes fragment, parts or portion (see page 26, line 1) or oligonucleotide (see page 27, line 9). Thus, the Hillier et al. anticipate claim 2 of the current application.

Because Bonaldo's nucleotide sequence (Accession No. BM697544, nucleotides 140-403 that encodes polypeptide of amino acids 1-88) that is of 100% identity to the

coding sequence (nucleotides 185-448 of SEQ ID NO:3, which encodes SEQ ID NO:4 polypeptide, *i.e.*, human Csl protein, of the instant application, meets the limitation set forth in claim 6, *i.e.*, an isolated polynucleotide encoding the protein "having the characteristics of Csl protein" or "a functional equivalent". Thus, Bonaldo et al. anticipate claim 6 of the current application.

Bonaldo et al. teach a polynucleotide (Accession No. BM697544) substantially identical (80.1%) to SEQ ID NO:3 of the current disclosure wherein the coding sequence (nucleotides 140-403 that encodes the polypeptide of amino acids 1-88) is of 100% identity to the coding sequence (nucleotides 185-448 that encodes the polypeptide of SEQ ID NO:4, *i.e.*, human Csl polypeptide consisting of 88 amino acids). Therefore, Bonaldo et al. teaching anticipates claims 7-10 of the instant application. Note that the claim language "substantially as set forth in SEQ ID NO:_" wherein "substantially" has not been defined in the specification; thus, the above phrase is open-ended.

Because claim 14 limitation sets forth a derivative of said nucleic acid molecule of claim 12, wherein the derivative includes nucleotide sequence derived from multiple nucleotides deletion or addition or oligonucleotide (see page 27, lines 6-11), Bonaldo et al. teaching with respect to the nucleotide sequences: Accession No: BM697544 anticipates claim 14 of the instant application.

Bonaldo et al. teach a polynucleotide comprising a nucleotide sequence (from positions 167-657, Accession No. BQ176246) that hybridizes to SEQ ID NO:1 sequence as being complimentary to nucleotides 288-778 of SEQ ID NO:1 of the current disclosure. Thus, Bonaldo et al. anticipates claims 3 and 12 of the instant application

where recite, "*hybridizing to*" SEQ ID NO:1" (claim 3) and "*hybridizing to* a genomic sequence" (claim 12).

Bonaldo et al. also anticipates claim 13 of the current application because Bonaldo et al. references disclose the sequenced (*i.e.*, isolated) polynucleotides: Accession No: BM697544 that reads on the exons 2, 3 and 4 sequences (see the above statement), and Accession No. BM69755 that reads on the exon 4 sequence (see the above statement), which exons comprise the gene map shown in Figure 2.

In view of the current claim languages "homolog", "analog", "chemical equivalent" and "mimetic" of the SEQ ID NO: 1 and 3 recited in claims 2-3, 12 and 14, whereas the specification does not define the recitations thereof, Bonaldo's polynucleotides stated *supra* also anticipate claims 2-3, 12 and 14 of the current application.

Claims 2-3 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hillier, L. D. et al. (*Genome Res.* (1996) 6, 807-828).

Hillier et al. teach a polynucleotide comprising (i) the sequence (Accession No. AA211521, nucleotides 86-142) that reads on the exon 2 sequence (nucleotides 1-57) of SEQ ID NO:7 the current invention; (ii) the sequence (Accession No. AA214155, nucleotides 156-242) that reads on the exon 3 sequence (nucleotides 1-87) of SEQ ID NO:8 of the current invention; and (iii) the sequence (Accession No. AA211521, nucleotides 229-377) that reads on the exon 4 sequence (nucleotides 1-149) of SEQ ID NO:9 of the current invention. Also, Hillier et al. teach a polynucleotide comprising a

complimentary sequence (Accession No. AA211443, nucleotides 421-1) that hybridizes to the exon 5 sequence (nucleotides 1-412) of SEQ ID NO:10 of the current invention, which meets the limitation set forth in claim 2, *i.e.*, a polynucleotide derivative (note that the derivative of the disclosed nucleic acid sequence includes antisense sequence or oligonucleotide, see page 27, line 9). Thus, the Hillier et al. teaching anticipates claim 2 of the current application.

Since the Hillier's sequence is complimentary to the exon 5 of SEQ ID NO:10 of the instant invention (see the statement *supra*), Hillier et al. also anticipates the application claims 3 and 12 in view of the limitation "hybridizing to SEQ ID NO:1 under low stringency conditions" set forth in claim 3, and the claim limitation "an isolated nucleic acid molecule ....hybridizing to genomic sequence comprising said exon regions under low stringency conditions" set forth in claim 12.

Also, Hillier et al. anticipate claim 13 of the current application because Hillier et al. disclose the sequenced, *i.e.*, isolated, polynucleotides: Accession Nos: AA211521, AA214155, AA211521, and AA211443 which correspond to the exons 7, 8, 9, and 10, respectively; the disclosure meets the limitation of claim 13 therefore.

Hillier et al. teaching with respect to the nucleotide sequences: Accession Nos: AA211521, AA214155, AA211521, and AA211443 which correspond to the exons 7, 8, 9, and 10 of the present disclosure, respectively, anticipates claim 14 of the instant application, because claim 14 limitation sets forth a derivative of said nucleic acid molecule of claim 12, wherein the derivative includes (i) nucleotide sequence derived

from multiple nucleotides deletion, or (ii) oligonucleotide (see page 27, lines 6-11),

Claims 2-3 are rejected under 35 U.S.C. 102(b) as being anticipated Bonadio, J. et al. (US Pat. No.5942496).

Bonadio *et al.* teach a polynucleotide sequence (nucleotides 2569-2453 of SEQ ID NO:2) complimentary to the subsequence (nucleotides 56-172) of SEQ ID NO:2 of the current disclosure. Since the derivative of nucleic acid sequence of the present invention includes antisense sequence or oligonucleotide (see page 27, line 9), the Bonaldo et al. teaching meets the limitation set forth in claim 2 of the instant application.

Also, Bonadio et al. anticipate claim 3 of the instant application because the claim limitation sets forth that the polynucleotide derivative of claim 2 hybridizes to SEQ ID NO:1 under low stringency condition, *i.e.*, 2 M salt concentration and 42 °C (see page 23, the third and fourth paragraphs); under said hybridization condition the Bonadio nucleotide fragment (nucleotides 2569-2453) hybridizes to the SEQ ID NO:1 sequence of the current disclosure.

Claims 2-3, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Burke, R. L. et al. (US Pat. No. 4880734).

Burke *et al.* teach a polynucleotide sequence encoding pyruvate kinase a protein wherein the fragment (from nucleotide positions –222 to –48) is of a homolog, i.e., 5% sequence identity to the sequence (nucleotides 507 – 681) of SEQ ID NO:1 of the current application. Despite functional irrelevance between Csl protein and pyruvate kinase, in

view of the claim language "homolog" and "analog", which have not been explicitly defined in the present disclosure, the Burke's teaching is applied to the application claims 2-3, 12 and 14.

Claims 2-3, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Belaguli, N. S. et al. (J. Biol. Chem. (1997) 272, 18222-18231).

Belaguli *et al.* teach a polynucleotide sequence encoding serum response factor (SRF) that modulates myogenic expression during muscle differentiation (see Figure 1). Since the current disclosure does not define "analog", "equivalent" and mimetic" which are recited in claims 2-3, 12 and 14, and since SRF protein and Csl protein involve in modulating muscle differentiation, the SRF sequence is regarded as an *analogue* or *equivalent* or *mimetic* to the Csl sequence of the current invention in view of the regulatory role of both SRF and Csl proteins.

Claim 2 is rejected under 35 U.S.C. 102(e) as being anticipated by Turner, K. et al. (US Pat. No. 6433142).

Turner *et al.* teach a polynucleotide sequence encoding a protein comprising a a fragment of amino acid sequence Ala-Pro-Thr-Thr (residues 389-392) (see Figure 1B) that reads on the same peptide sequence (residues 44-47) which is a portion of SEQ ID NO:2 of the current disclosure. Because the "derivative" includes *fragment* or *portion* (see page 26, lines 1-2), the Turner et al. teaching meets the limitation set forth in claim 2 of the current application.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Wei Liu whose telephone number is (703) 306-3483.

The examiner can normally be reached from 9:00 a.m. to 5:30 p.m. on weekdays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Christopher Low, can be reached on 703-308-2923. The fax phone number for the organization where this application or proceeding is assigned is 703 308-4242 or 703 872-9306 (official) or 703 872-9307 (after final). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Samuel Wei Liu, Ph.D.

April 7, 2003

KAREN COCHRANE CARLSON, PH.D
PRIMARY EXAMINER